

What is Claimed is:

1. A vacuum tube circuit, comprising:
  - a vacuum tube having a cathode terminal, a plate terminal, and a grid terminal, the cathode terminal being heated by a heater for releasing electrons from the cathode terminal;
  - a low source voltage which is supplied to the plate terminal of the vacuum tube and the heater;
  - a first grid resistor which is series connected to the grid terminal of the vacuum tube; and
  - a positive voltage which supplied to the grid terminal through the grid resistor.
2. A vacuum tube circuit as defined in Claim 1, further comprising a plate resistor which is connected to the plate terminal of the vacuum tube, wherein the low source voltage is supplied to the plate terminal through the plate resistor and to the heater.
3. A vacuum tube circuit as defined in Claim 1, wherein the positive voltage supplied to the grid terminal of the vacuum tube is produced by dividing the low source voltage by a voltage divider.
4. A vacuum tube circuit as defined in Claim 3, wherein the voltage divider is configured by a variable resistor.
5. A vacuum tube circuit as defined in Claim 3, further comprising a second grid resistor which is connected between the voltage divider and the first grid resistor.
6. A vacuum tube circuit as defined in Claim 1, wherein distortions are created by a characteristic of the vacuum tube and the grid register to add specific sound effects to an input signal.
7. A vacuum tube circuit, comprising:
  - a vacuum tube having a cathode terminal, a plate terminal, and a grid terminal, the cathode terminal

being heated by a heater for releasing electrons from the cathode terminal;

a low source voltage which is supplied to the plate terminal of the vacuum tube and the heater;

5 a grid resistor which is series connected to the grid terminal of the vacuum tube;

a positive voltage which supplied to the grid terminal through the grid resistor; and

10 a bias control circuit which controls an output bias voltage of the vacuum tube to a predetermined voltage.

8. A vacuum tube circuit as defined in Claim 7, the bias control circuit is configured by a negative feedback loop for automatically control the output bias voltage to the  
15 predetermined voltage.

9. A vacuum tube circuit as defined in Claim 7, the bias control circuit comprising:

20 a differential amplifier whose output is connected to the grid terminal of the vacuum tube through the grid resistor; and

an integration circuit for averaging an output voltage at the plate terminal of the vacuum tube wherein the integration circuit is connected between the plate terminal and the differential amplifier.

25 10. A vacuum tube circuit as defined in Claim 9, the predetermined voltage of the output bias voltage is determined by a reference voltage supplied to an inverting input terminal of the differential amplifier.

30 11. A vacuum tube circuit as defined in Claim 9, the integration circuit provides an average value of the output voltage at the plate terminal to a non-inverting input terminal of the differential amplifier.

35 12. A vacuum tube circuit as defined in Claim 7, further comprising a plate resistor which is connected to the plate terminal of the vacuum tube, wherein the low source

voltage is supplied to the plate terminal through the plate resistor and to the heater.

13. A vacuum tube circuit as defined in Claim 7,  
wherein distortions are created by a characteristic of the  
5 vacuum tube and the grid register to add specific sound  
effects to an input signal.

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